

WHAT IS CLAIMED IS:

1. A jitter canceling method for canceling video signal jitter in predetermined time periods of a video signal in processing of the video signal using as a reference a first synchronization signal and a second synchronization signal different from said first synchronization signal, said method comprising the steps of:

executing a second synchronization signal generating operation for generating said second synchronization signal from an external reference signal;

detecting time difference jitter in a time difference between said first synchronization signal and said second synchronization signal;

controlling said second synchronization signal generating operation in response to said time difference jitter to reduce said time difference jitter.

2. A jitter canceling method according to claim 1, wherein the second synchronization signal generating operation includes the steps of:

generating a primitive second synchronization signal from said external reference signal;

delaying said primitive second synchronization signal by a selected amount of delay to generate a delayed second synchronization signal; and

matching said delayed second synchronization signal with said video signal in timing to generate said second synchronization signal.

3. A jitter canceling method according to claim 2,

wherein said step of delaying includes:

generating a plurality of delayed second synchronization signals having different amounts of delay; and

selecting one delayed second synchronization signal having a selected amount of delay from said plurality of delayed second synchronization signals.

4. A jitter canceling method according to claim 2, wherein said step of matching said delayed synchronization signal with said video signal in timing uses a reference clock derived from said video signal.

5. A jitter canceling method according to claim 4, wherein said step of matching said delayed synchronization signal with said video signal in timing includes:

sampling said delayed second synchronization signal based on said reference clock to generate a sampled synchronization signal; and

generating said second synchronization signal which matches with said video signal in timing based on said sampled synchronization signal.

6. A jitter canceling method according to claim 2, wherein said step of detecting time difference jitter includes:

detecting a phase difference of said second synchronization signal relative to said first synchronization signal every said predetermined time period;

determining whether or not said phase difference is

the same in two adjacent said predetermined periods to generate an unmatched signal when said phase difference is not the same; and

counting the number of said unmatched signals to generate a delay selection signal for specifying said selected amount of delay in accordance with the result of the counting.

7. A jitter canceling method according to claim 6, wherein said step of reducing time difference jitter includes the step of increasing or decreasing said selected amount of delay in response to said delay selection signal.

8. A jitter canceling method according to claim 7, wherein said selected amount of delay is increased or decreased each time by a predetermined unit amount of delay.

9. A jitter canceling method according to claim 7, wherein said selected amount of delay is initially set to be equal to zero.

10. A jitter canceling method according to claim 1, wherein:

said first synchronization signal is an internal synchronization signal generated from said video signal under processing; and

said second synchronization signal is an external synchronization signal generated from said external reference signal.

11. A jitter canceling method according to claim 1, wherein said synchronization signal comprises a trigger signal.

12. A jitter canceling apparatus for canceling video signal jitter in predetermined time periods of a video signal in processing of the video signal using as a reference a first synchronization signal and a second synchronization signal different from said first synchronization signal, said apparatus comprising:

a synchronization signal generator receiving an external reference signal to generate a primitive second synchronization signal;

a time difference jitter detector connected to receive said first synchronization signal and said second synchronization signal and detecting jitter in a time difference between said first and second synchronization signals to generate a time difference jitter signal indicative of the time difference jitter;

a delay circuit connected to receive said primitive second synchronization signal and said time difference jitter signal and delaying said primitive second synchronization signal by a selected amount of delay in response to said time difference jitter signal to generate a delayed second synchronization signal; and

a timing matching circuit generating from said delayed second synchronization signal said second synchronization which is matched with said video signal in timing.

13. A jitter canceling apparatus according to claim 12, wherein said delay circuit includes:

a delay signal generator generating a plurality of

delayed second synchronization signals having different amounts of delay; and

a selector connected to receive said plurality of delayed second synchronization signals and selecting one delayed second synchronization signal having said selected amount of delay from said plurality of delayed second synchronization signals.

14. A jitter canceling apparatus according to claim 13, wherein said plurality of delayed second synchronization signals are different one after another by a predetermined unit amount of delay.

15. A jitter canceling apparatus according to claim 13, wherein said delay circuit includes delay lines.

16. A jitter canceling apparatus according to claim 12, wherein said timing matching circuit uses a reference clock derived from said video signal.

17. A jitter canceling apparatus according to claim 16, wherein said timing matching circuit includes:

a sampling circuit sampling said delayed second synchronization signal based on said reference clock to generate a sampled synchronization signal; and

a generator generating said second synchronization signal matched with said video signal in timing based on said sampled synchronization signal.

18. A jitter canceling apparatus according to claim 16, wherein said selected amount of delay by which said primitive second synchronization signal is delayed has a maximum of less than one period of said reference clock.

19. A jitter canceling apparatus according to claim 12, wherein said time difference jitter detector includes:

a phase difference detector detecting a phase difference of said second synchronization signal relative to said first synchronization signal every said predetermined time period; and

a match detector determining whether or not said phase difference is the same in two adjacent said predetermined periods to generate an unmatched signal when said phase difference is not the same.

20. A jitter canceling apparatus according to claim 19, wherein said time difference jitter detector further comprises:

a jitter reducing circuit counting the number of said unmatched signals to generate a delay selection signal for specifying said selected amount of delay in accordance with the result of the counting, thereby increasing or decreasing said selected amount of delay in response to said delay selection signal.

21. A jitter canceling apparatus according to claim 20, wherein said selected amount of delay is increased or decreased each time by a predetermined unit delay.

22. A jitter canceling apparatus according to claim 20, wherein said selected amount of delay is initially set to be equal to zero.

23. A jitter canceling apparatus according to claim 12, wherein:

said first synchronization signal is an internal

synchronization signal generated from said video signal under processing; and

said second synchronization signal is an external synchronization signal generated from said external reference signal.

24. A jitter canceling apparatus according to claim 12, wherein said predetermined time period is a frame period or a horizontal period.

25. A jitter canceling apparatus according to claim 12, wherein said synchronization signal is a frame signal or a horizontal synchronization signal.

26. A jitter canceling apparatus according to claim 12, wherein said external reference signal is a video signal of the same type as or different from said video signal.

27. A jitter canceling apparatus according to claim 12, wherein the processing of said video signal includes displaying the waveform of said video signal.

28. A video signal processing apparatus comprising the jitter canceling apparatus according to claim 12.

29. A video signal processing apparatus according to claim 28, wherein said video signal processing apparatus is a waveform monitor.